

02/07/00
jc772 U.S. PTO

02-08-00

A

Practitioner's Docket No. FORE-58

PATENT

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P. § 601, 7th ed.

jc525 U.S. PTO
09/499859
02/07/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Mark Held, Srinivas R. Goli

WARNING: 37 C.F.R. § 1.41(a)(1) points out:

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(f) is filed supplying or changing the name or names of the inventor or inventors."

For (title):

UPC FAIL DOWN

CERTIFICATION UNDER 37 C.F.R. § 1.10*

(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date February 7, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL396485505US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Tracey L. Milka

(type or print name of person mailing paper)

Tracey L. Milka

Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(New Application Transmittal [4-1]—page 1 of 11)

1. Type of Application

This new application is for a(n)

(check one applicable item below)

- ☒ Original (nonprovisional)
- ☐ Design
- ☐ Plant

WARNING: Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

WARNING: Do not use this transmittal for the filing of a provisional application.

NOTE: If one of the following 3 items apply, then complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED** and a **NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION**.

- ☐ Divisional.
- ☐ Continuation.
- ☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

NOTE: A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:

(i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or

(ii) Complete as set forth in § 1.51(b); or

(iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or

(iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(f) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

WARNING: If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application **must** be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

- ☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

 9 Pages of specification

 4 Pages of claims

 1 Sheets of drawing

WARNING: **DO NOT** submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c).

(complete the following, if applicable)

- ☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).
- ☐ formal
- ☒ informal

B. Other Papers Enclosed

 0 Pages of declaration and power of attorney

 1 Pages of abstract

 0 Other

4. Additional papers enclosed

- ☐ Amendment to claims
- ☐ Cancel in this applications claims _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☐ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)
- ☐ Preliminary Amendment
- ☐ Information Disclosure Statement (37 C.F.R. § 1.98)
- ☐ Form PTO-1449 (PTO/SB/08A and 08B)
- ☐ Citations

- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.
- ☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative
- ☐ Special Comments
- ☐ Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)–(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)–(4).

NOTE: "The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.62, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(f) is filed supplying or changing the name or names of the inventor or inventors." 37 C.F.R. § 1.41(a)(1).

- ☐ Enclosed

Executed by

(check all applicable boxes)

- ☐ inventor(s).
- ☐ legal representative of inventor(s).
37 C.F.R. §§ 1.42 or 1.43.
- ☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.
 - ☐ This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

- ☒ Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

- ☐ Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of all the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

- ☐ Showing that the filing is authorized.
(not required unless called into question. 37 C.F.R. § 1.41(d))

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

- ☒ The same.

or

- ☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,
☐ is submitted.
☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of \$130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

- ☒ English
☐ Non-English
☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

8. Assignment

- ☒ An assignment of the invention to FORE Systems, Inc.

- ☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

- ☒ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters—one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

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9. Certified Copy

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

- ☐ is (are) attached.
☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 C.F.R. § 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. § 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 C.F.R. § 1.16)

A. ☒ Regular application

CLAIMS AS FILED			
Number filed	Number Extra	Rate	Basic Fee 37 C.F.R. § 1.16(a) \$760.00
Total			
Claims (37 C.F.R. § 1.16(c))	14 - 20 = 0	× \$ 18.00	0.00
Independent			
Claims (37 C.F.R. § 1.16(b))	2 - 3 = 0	× \$ 78.00	0.00
Multiple dependent claim(s), if any (37 C.F.R. § 1.16(d))		+ \$260.00	

- ☐ Amendment cancelling extra claims is enclosed.
☐ Amendment deleting multiple-dependencies is enclosed.
☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 C.F.R. § 1.16(d).

Filing Fee Calculation \$ 690.00

B. ☐ Design application
(\$310.00—37 C.F.R. § 1.16(f))

Filing Fee Calculation \$

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- C. ☐ Plant application
(\$480.00—37 C.F.R. § 1.16(g))

Filing fee calculation

\$ _____

11. Small Entity Statement(s)

- ☐ Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

WARNING: "Small entity status must not be established when the person or persons signing the . . . statement can **unequivocally** make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).

(complete the following, if applicable)

- ☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

- 35 U.S.C. § ☐ 119(e),
☐ 120,
☐ 121,
☐ 365(c),

and which status as a small entity is still proper and desired.

- ☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of A, B or C above)

\$ _____

NOTE: Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

12. Request for International-Type Search (37 C.F.R. § 1.104(d))

(complete, if applicable)

- ☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

☐ Not Enclosed

☐ No filing fee is to be paid at this time.

(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)

☒ Enclosed

☒ Filing fee \$ 690.00

☐ Recording assignment
(\$40.00; 37 C.F.R. § 1.21(h))
(See attached "COVER SHEET FOR
ASSIGNMENT ACCOMPANYING NEW
APPLICATION".) \$ _____

☐ Petition fee for filing by other than all the
inventors or person on behalf of the inventor
where inventor refused to sign or cannot be
reached
(\$130.00; 37 C.F.R. §§ 1.47 and 1.17(l)) \$ _____

☐ For processing an application with a
specification in
a non-English language
(\$130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k)) \$ _____

☐ Processing and retention fee
(\$130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l)) \$ _____

☐ Fee for international-type search report
(\$40.00; 37 C.F.R. § 1.21(e)) \$ _____

NOTE: 37 C.F.R. § 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed \$ 690.00

14. Method of Payment of Fees

☒ Check in the amount of \$ 690.00

☐ Charge Account No. _____ in the amount of
\$ _____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

- ☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 19-0737:

☒ 37 C.F.R. § 1.16(a), (f) or (g) (filing fees)

☒ 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☐ 37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

☐ 37 C.F.R. § 1.17(a)(1)–(5) (extension fees pursuant to § 1.136(a)).

☐ 37 C.F.R. § 1.17 (application processing fees)

NOTE: “. . . A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission.” 37 C.F.R. § 1.136(a)(3).

☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires “Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . .” From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as “other than a small entity” and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment

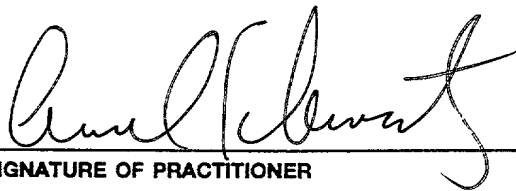
NOTE: "... Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

- ☒ Credit Account No. 19-0737
☐ Refund

Reg. No. 30,587

Tel. No. (412) 621-9222

Customer No.



SIGNATURE OF PRACTITIONER

Ansel M. Schwartz

(type or print name of attorney)

One Sterling Plaza
201 N. Craig Street

P.O. Address

Suite 304
Pittsburgh, PA 15213

☐ **Incorporation by reference of added pages**

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

- ☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added _____

- ☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added _____

- ☐ Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added _____

- ☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added _____

☒ **Statement Where No Further Pages Added**

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

- ☒ This transmittal ends with this page.

UPC FAIL DOWN

FIELD OF THE INVENTION

The present invention is related to meeting Quality of Service requirements for circuits when network resources are not available. More specifically, The present invention is related to meeting Quality of Service requirements for circuits when network resources are not available by automatically selectively relaxing the Quality of Service requirements.

BACKGROUND OF THE INVENTION

QoS requirements for an administratively created circuit are stored in an object called a UPC (Usage Parameter Contract). The administratively created circuits that can have associated UPCs are called SPVCs (Soft Permanent Virtual Circuits) or SPVPs (Soft Permanent Virtual Paths).

In an ATM network, requests for circuits can be rejected due to a lack of the network resources needed to meet that circuit's QoS (Quality of Service) requirements. In the normal case when such a circuit is not successfully established, the failure is usually communicated to the user and the network administrator in some fashion. One option at that point would be to relax the QoS requirements in a way that allows the circuit to be established within the framework of the existing resources. That option currently requires operator intervention. This

invention is a method whereby through configuration options and software, the switch will attempt to create the rejected circuit by selectively relaxing the QoS requirements of the call automatically without the need for operator intervention.

SUMMARY OF THE INVENTION

The present invention pertains to an apparatus for establishing circuits in an ATM network. The apparatus comprises a controller which attempts to establish a circuit according to original quality of service requirements of a UPC associated with the circuit, which determines available resources of the ATM network and which automatically relaxes the original quality of service requirements associated with a circuit for the circuit to be formed in the ATM network with the available resources of the ATM network. The apparatus comprises a memory which stores a plurality of different quality of service requirements. The memory is connected to the controller for the controller to obtain different quality of service requirements for the controller to automatically relax the original quality of service requirements with different quality of service requirements.

The present invention pertains to a method for establishing circuits in an ATM network. The method comprises the steps of attempting to form a connection in an ATM network satisfying original quality of service requirements. Then there is the step of rejecting the formation of the circuit due to resources

of the ATM network not being available to meet the original quality of service requirements of the circuit. Next there is the step of relaxing automatically the quality of service requirements of the circuit. Then there is the step of creating the circuit in the ATM network subject to the relaxed quality of service requirements.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings, the preferred embodiment of the invention and preferred methods of practicing the invention are illustrated in which:

Figure 1 is a schematic representation of an apparatus of the present invention.

DETAILED DESCRIPTION

Referring now to the drawings wherein like reference numerals refer to similar or identical parts throughout the several views, and more specifically to figure thereof, there is shown an apparatus 10 for establishing circuits in an ATM network 12. The apparatus 10 comprises a controller 14 which attempts to establish a circuit according to original quality of service requirements of a UPC associated with the circuit, which determines available resources of the ATM network 12 and which automatically relaxes the original quality of service requirements associated with a circuit for the circuit to be formed in the ATM network 12 with the

available resources of the ATM network 12. The apparatus 10 comprises a memory 16 which stores a plurality of different quality of service requirements. The memory 16 is connected to the controller 14 for the controller 14 to obtain different quality of service requirements for the controller 14 to automatically relax the original quality of service requirements with different quality of service requirements.

Preferably, the controller 14 automatically selectively relaxes the quality of service requirements by choosing a different quality of service requirement. The memory 16 preferably includes an index 18 having the different quality of service requirements ordered in terms of priority for the controller 14 to choose when the controller 14 relaxes the original quality of service requirements and attempts to establish the circuit. Preferably, the controller 14 places a flag 20 in the memory 16 for the circuit when the circuit is established with relaxed quality of service requirements.

The controller 14 periodically preferably reexamines the ATM network 12 resources and attempts to establish the circuit with the original quality of service requirements in the ATM network 12. Preferably, when the controller 14 attempts to establish the circuit with the original quality of service requirements, if the original quality of service requirements of the circuit cannot be satisfied, the controller 14 attempts to establish the circuit with the quality of service requirements in the index 18 according to

their priority until quality of service requirements with a higher priority than the quality of service requirement that the circuit is currently established under in the network 12 is found. The circuit is preferably an SPVx circuit.

5 The present invention pertains to a method for establishing circuits in an ATM network 12. The method comprises the steps of attempting to form a connection in an ATM network 12 satisfying original quality of service requirements. Then there is the step of rejecting the formation of the circuit due to resources of the ATM network 12 not being available to meet the original
10 quality of service requirements of the circuit. Next there is the step of relaxing automatically the quality of service requirements of the circuit. Then there is the step of creating the circuit in the ATM network 12 subject to the relaxed quality of service
15 requirements.

Preferably, the relaxing step includes the step of relaxing automatically and selectively the original quality of service requirements by choosing different quality of service requirements than the original quality of service requirements.

20 The relaxing automatically and selectively step preferably includes the step of choosing the different quality of service requirements by a controller 14 from an index 18 having a plurality of different quality of service requirements stored in a memory 16 connected to the controller 14.

Preferably, before the attempting step, there is the step of placing the different quality of service requirements in the index 18, each with a priority relative to each other and the original quality of service requirements. After the recreating
5 step, there is preferably the step of placing a flag 20 in the memory 16 by the controller 14 corresponding with the circuit that is established with relaxed quality of service requirements.

Preferably, after the creating step, there are the steps of re-examining the ATM network 12 resources and attempting to
10 establish the circuit with the original quality of service requirements in the ATM network 12. After the attempting to establish step, there is preferably the step of attempting to establish the circuit with the different quality of service requirements in the index 18 according to their priority until
15 different quality of service requirements with a higher priority than the quality of service requirements that the circuit is currently established under in the network 12 is found.

In the operation of the preferred embodiment, for every relevant QoS parameter for which there is an entry in a UPC, the
20 software allows the user to specify which parameters can be changed, in what order, and by how much. So, if a call cannot be routed, the switch can retry with, for example, less bandwidth required, or more delay. The current parameters settable in a UPC include the following:

	[[-servcat] <ServCat>]	Service Category (default: UBR)
	[[-pscheme] <pScheme>]	Policing Scheme (default: ubrl)
	[[-pcr] <integer>]	PCR (default: "")
	[[-scr] <integer>]	SCR (default: "")
5	[[-mbs] <integer>]	MBS (default: "")
	[[-cdvt] <integer>]	CDVT
	[[-aal5epd] (yes no)]	AAL5 EPD (default: no)
	[[-name] <text>]	Name (default: "")
	[[-gcra] (on off)]	GCRA Policing (default: on)
10	[[-aal5] (yes no)]	AAL5 (default: no)
	[[-pktdisc] (on off)]	Packet Discard (default: on)
	[[-pppol] (on off)]	PP Policing (default: off)
	[[-schdmod] <SchedMode>]	Scheduling Mode (default: default)
	[[-altclp] (on off)]	Alt CLP Threshold (default: off)
15	[[-mcr] <integer>]	ABR MCR (default: "")
	[[-aal5cnt] <CountMode>]	AAL5 Counting Mode (default: default)
	[[-subcat] <integer>]	Service Sub-category (default: default)
	[[-lbmincr] <integer>]	Load Balanced MinCR
	[[-lbpcr] <integer>]	Load Balanced PCR

20 A controller 14 would unambiguously state the "back-off" order and "back-off" values for each parameter. That set of values could be saved and referred to by an index 18. Then the "back-off" index 18 could be referenced within a UPC. Any SPVX which references a UPC with a "back-off" index 18 configured would behave

25 in the manner described in the event that a route cannot be found using the default UPC parameters.

Finally, if an SPVX is established only after one or more of the original QoS parameters have been changed, then that SPVX

would be tagged as having been "sub-optimally established." This designation is similar to the "sub-optimally routed" designation currently existing for SPVXs. In this case, such "sub-optimally established" SPVXs are periodically re-examined by the switch software to see if a route exists that satisfies the original QoS contract. If it is determined that such a route exists, then the SPVX is re-routed with the original UPC contract parameters.

Tagging occurs by placing a flag 20 in the memory 16 by the controller 14 corresponding with the circuit that is established with relaxed quality of service requirements. When the ATM network 12 resources are reexamined, circuits that have a flag 20 are attempted to be established with their original quality of service requirements in the ATM network 12. The controller 14 has stored the original quality of service requirements of each circuit with a flag in the memory. If the original quality of service requirements for the circuit cannot be met, the controller 14 then attempts to establish the circuit with the different quality of service requirements in the index 18 according to their priority until different quality of service requirements with a higher priority than the quality of service requirements that the circuit is currently established under in the network 12 is found. If none can be found, then the circuit remains established as it is, and the process is repeated again the next time the ATM network 12 resources are reexamined.

The method and apparatus 10 will permit more efficient use of network 12 resources by allowing software to automatically work around failures in a deterministic and selective manner. This can be a feature which can be turned on or off on a per-circuit basis allowing the possibility that this can be a service for which networks can charge users. Network 12 operators will no longer be called on to act in circumstance where the software handles failures.

Although the invention has been described in detail in the foregoing embodiments for the purpose of illustration, it is to be understood that such detail is solely for that purpose and that variations can be made therein by those skilled in the art without departing from the spirit and scope of the invention except as it may be described by the following claims.

WHAT IS CLAIMED IS:

1. An apparatus for establishing circuits in an ATM network comprising:

a controller which attempts to establish a circuit according to original quality of service requirements of a UPC associated with the circuit, which determines available resources of the ATM network and which automatically relaxes the original quality of service requirements associated with a circuit for the circuit to be formed in the ATM network with the available resources of the ATM network; and

a memory which stores a plurality of different quality of service requirements, said memory connected to the controller for the controller to obtain different quality of service requirements for the controller to automatically relax the original quality of service requirements with different quality of service requirements.

2. An apparatus as described in Claim 1 wherein the controller automatically selectively relaxes the quality of service requirements by choosing a different quality of service requirement.

3. An apparatus as described in Claim 2 wherein the memory includes an index having the different quality of service

requirements ordered in terms of priority for the controller to choose when the controller relaxes the original quality of service requirements and attempts to establish the circuit.

4. An apparatus as described in Claim 3 wherein the controller places a flag in the memory for the circuit when the circuit is established with relaxed quality of service requirements.

5. An apparatus as described in Claim 4 wherein the controller periodically reexamines the ATM network resources and attempts to establish the circuit with the original quality of service requirements in the ATM network.

6. An apparatus as described in Claim 5 wherein when the controller attempts to establish the circuit with the original quality of service requirements, if the original quality of service requirements of the circuit cannot be satisfied, the controller attempts to establish the circuit with the quality of service requirements in the index according to their priority until quality of service requirements with a higher priority than the quality of service requirement that the circuit is currently established under in the network is found.

7. An apparatus as described in Claim 6 wherein the circuit is an SPVx circuit.

8. A method for establishing circuits in an ATM network comprising the steps of:

attempting to form a connection in an ATM network satisfying original quality of service requirements;

rejecting the formation of the circuit due to resources of the ATM network not being available to meet the original quality of service requirements of the circuit;

relaxing automatically the quality of service requirements of the circuit; and

creating the circuit in the ATM network subject to the relaxed quality of service requirements.

9. A method as described in Claim 8 wherein the relaxing step includes the step of relaxing automatically and selectively the original quality of service requirements by choosing different quality of service requirements than the original quality of service requirements.

10. A method as described in Claim 9 wherein the relaxing automatically and selectively step includes the step of choosing the different quality of service requirements by a controller from an index having a plurality of different quality of

service requirements stored in a memory connected to the controller.

11. A method as described in Claim 10 including before the attempting step, there is the step of placing the different quality of service requirements in the index, each with a priority relative to each other and the original quality of service requirements.

12. A method as described in Claim 11 including after the recreating step, there is the step of placing a flag in the memory by the controller corresponding with the circuit that is established with relaxed quality of service requirements.

13. A method as described in Claim 12 including after the creating step, there are the steps of re-examining the ATM network resources and attempting to establish the circuit with the original quality of service requirements in the ATM network.

14. A method as described in Claim 13 including after the attempting to establish step, there is the step of attempting to establish the circuit with the different quality of service requirements in the index according to their priority until different quality of service requirements with a higher priority than the quality of service requirements that the circuit is currently established under in the network is found.

ABSTRACT OF THE DISCLOSURE

UPC FAIL DOWN

An apparatus for establishing circuits in an ATM network. The apparatus includes a controller which attempts to establish a circuit according to original quality of service requirements of a UPC associated with the circuit, which determines available resources of the ATM network and which automatically relaxes the original quality of service requirements associated with a circuit for the circuit to be formed in the ATM network with the available resources of the ATM network. The apparatus includes a memory which stores a plurality of different quality of service requirements. The memory is connected to the controller for the controller to obtain different quality of service requirements for the controller to automatically relax the original quality of service requirements with different quality of service requirements. A method for establishing circuits in an ATM network.

FIG. 1 is a block diagram of a system 10 in accordance with the present invention. The system 10 includes a controller 14 and a memory 16. The controller 14 is connected to the memory 16. The memory 16 includes an index 18 and a flags 20. The index 18 includes a QOS REQUIREMENTS. The system 10 is connected to a network 12.

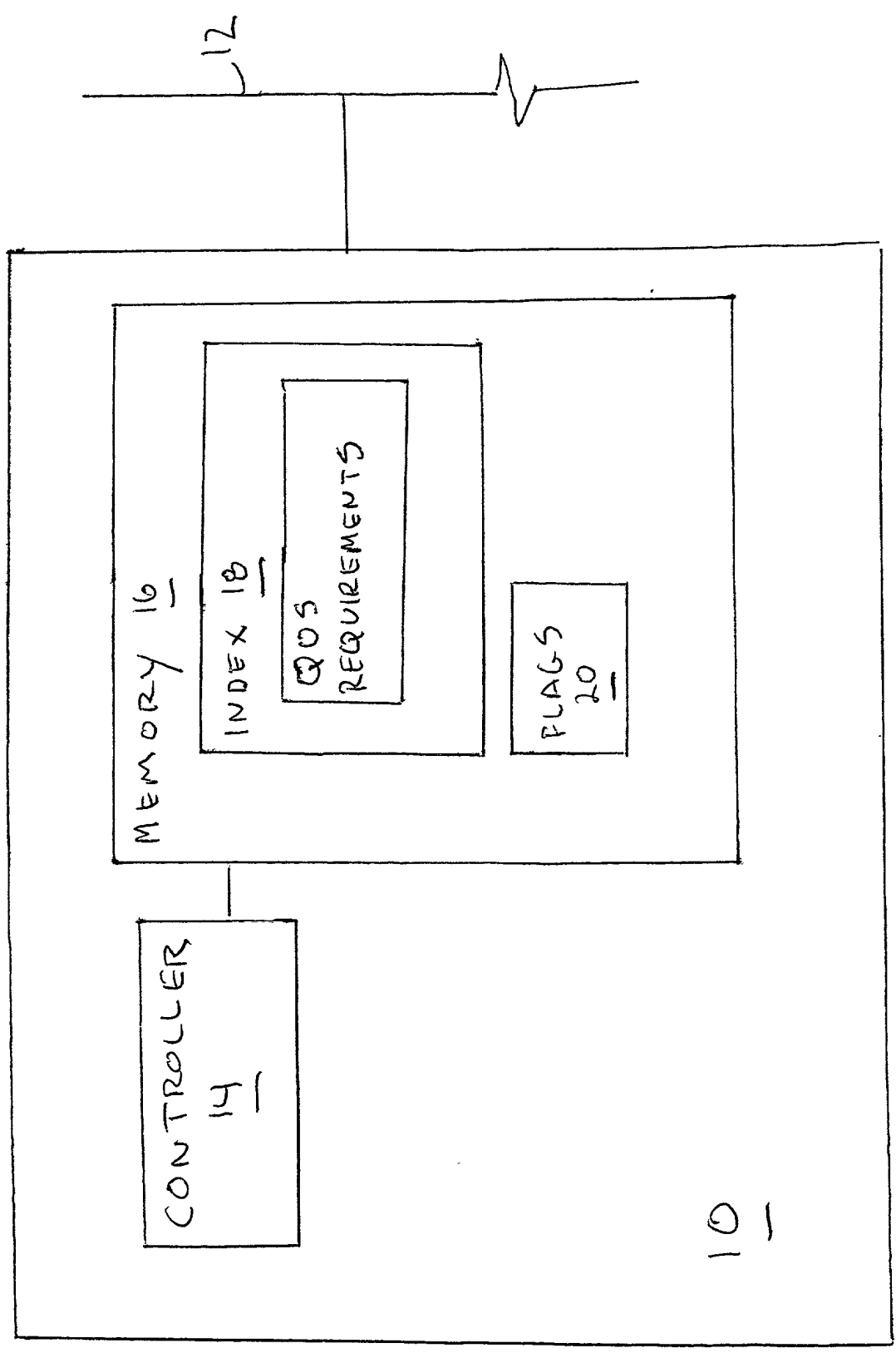


FIG 1